ASANTÉ

FriendlyNET® FM2017

SNMP/Web Managed Switch with Fiber Option

User's Manual

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Chapter 1. Introduction

Thank you for purchasing an Asanté FriendlyNET FM2017 SNMP/Web managed switch. This switch is designed to build high-performance switched networks. It uses store-and-forward technology, providing low latency for high-speed networking, and is targeted at workgroup, department or backbone computing environments at small to medium enterprise businesses.

The switch features full plug-and-play installation. LED indicators provide for easy monitoring of switch operation. The switch has 16 auto-sensing 10/100 BaseTX Fast Ethernet RJ-45 ports plus one extension slot for an optional 1-port 100BaseFX fiber module, which makes it easy to connect to a remote site up to 2 Km (multi-mode) or 15-60 Km (single-mode) away. The following types of fiber connectors are available for use with the FM2017: SC, SC single-mode, MT-RJ and VF-45.

The switch provides automatic MDI/MDIX crossover for each 10/100Mbps port. In general, MDI means connecting to another hub or switch while MDIX means connecting to a workstation or PC. **Auto MDI/MDIX** means that you can connect to another switch or workstation without changing non-crossover or crossover cabling.

There is a CPU module on the rear panel of the switch. It provides the function of **Web-Based Management**, for ease of managing and configuring the FM2017. From cabinet management to port-level control and monitoring, you can visually configure and manage your network via your web browser. The switch can also be managed via third-party SNMP Management.

Features

The FriendlyNET FM2017 Fast Ethernet switch has the following features:

- Compact size — designed for small to medium workgroups in space-limited areas; installs on desktop, or in a standard 19-inch equipment rack
- Plug-and-play installation
- Provides 16 auto-negotiating 10/100Mbps RJ-45 ports
- N-Way auto-negotiation on all ports automatically senses port speed (10/100Mbps) and negotiates duplex mode (full-duplex or half-duplex)
- Automatic MDI/MDIX crossover for each 10/100 port
- Supports CPU expansion slot to upgrade SNMP function
- Complies with IEEE 802.3 Ethernet, IEEE 802.3u Fast Ethernet and IEEE 802.3x flow control (in full-duplex mode) standards
- Provides power, 100M, full- or half-duplex, and link/activity LEDs to aid network diagnosis and simple management
- Ideal for deployment with high-speed servers, dedicated bandwidth (10Mbps or 100Mbps) workgroups, or as a segmentation device for larger congested networks
- 8K-entry MAC address table and automatic address learning
- 4MB packet buffer sharing
- Performs non-blocking data transfer at full wire speed

Intelligent Management Features

- Web-based management
- SNMP Network management
- Supports up to 17 VLAN groups
- MIB II (RFC1213) supported
- Port Configuration management
- Port Disable/Enable Setting
- Auto-negotiation, 100M Full/half-duplex or 10M Full/half-duplex mode

Ethernet Switching Technology

Ethernet switching technology has dramatically boosted the total bandwidth of a network, eliminating congestion problems inherent with Carrier Sense Multiple Access with Collision Detection (CSMA/CD) protocol, and has greatly reduced unnecessary transmissions.

This revolutionized networking in the following ways: First, by allowing two-way, simultaneous transmissions over the same port (Full-duplex mode), which essentially doubled the network bandwidth; Second, by reducing the collision domain to a single switch-port, which eliminated the need for carrier sensing; Third, by using the store-and-forward technology's approach of inspecting each packet to intercept corrupt or redundant data, switching eliminated unnecessary transmission that slows the network; Finally, by employing address learning, which replaced the inefficient receiving port.

Auto-negotiation regulates the speed and duplex of each port, based on the capability of both devices. Flow-control allows transmission from a 100Mbps node to a 10Mbps node without loss of data. Auto-negotiation and flow-control may require disablement for some networking operations involving legacy equipment. Disabling the auto-negotiation is accomplished by fixing the speed or duplex of a port.

Ethernet switching technology has supplied higher performance at costs lower than other solutions. Wider bandwidth, no congestion, and the reduction in traffic is why switching is replacing expensive routers and inefficient hubs as the ultimate networking solution. Switching brought a whole new way of thinking to networking.

Management Methods

The FM2017 supports configuration and management via a Web-browser or via SNMP Management. For more information on configuring and managing your switch, please see Chapters 4 and 5.

Console and Telnet Connection

Console Connection is done through the RS-232 Console Port. Managing the switch in this method requires a direct connection to a PC, while Telnet management is done over the network. Once the switch is on the network, you can use Telnet to Log in and change the configuration.

Web-Based Management

The switch provides an embedded HTML web site residing in flash memory. It offers advanced management features and allow users to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer or Navigator. For more information, see Chapter 5. Web-Based Management.

SNMP Network Management

SNMP (Simple Network Management Protocol) provides a means to monitor and control network devices and report activity in each network device to manage configurations, performance, and security. This switch provides up to 4 IP addresses for the access of trap managers. You can submit community strings on *get-community, set-community* and *trap-community* to authorize management access.

Chapter 2. Hardware Installation

This chapter describes the front and rear panels of the FM2017, and explains how to install, mount and apply power to the switch.

Package Contents

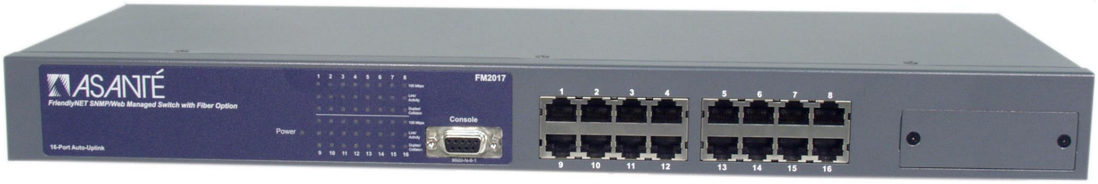
The switch is shipped with the following items:

- Switch
- AC power cord
- Four (4) Rubber feet
- Rack mount Kit
- RS-232 cable
- User's Manual (this document)

Compare the contents of your switch's package against the items listed above. If any of the items is missing or damaged, contact your dealer immediately for service.

Front Panel

The front panel of the FM2017 contains the LED Indicators, the console port, the 16 10/100Mbps ports and the 100FX module slot.



LED Indicators

The LED Indicators give real-time information of systematic operation status. The following table provides descriptions of LED status and their meaning.

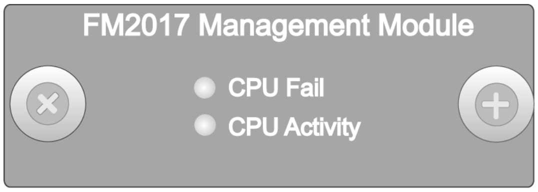
LED	Status	Description
Power	Green Off	Power is on. Power is not connected, or is turned off.
100M	Green Off	A valid 100Mbps link has been established on the port. A 10Mbps link has been established on the port, or no device is detected.
Link/Activity	Green Blinking Off	A valid connection to another device has been established on the port. Traffic is detected on the port (transmitting or receiving). No device is attached.
Full-Duplex	Yellow Blinking Off	The port is operating in full-duplex. The port is operating in half-duplex. No device is attached, or the port is in half-duplex mode.

Rear Panel

The rear panel contains the Network Management module and the 3-pronged power plug. The switch uses AC in the range of 100-240V AC, 50-60Hz.

The Network Management module holds the Flash memory, and has two LEDs:

- **CPU Fail**: The CPU Fail LED is lit when the switch's self test and initialization are in progress, after powering on or rebooting the switch
- **CPU Activity**: The CPU Activity LED is lit when the switch is displaying network management information



Mounting Configurations

This section describes how to mount the switch on a desktop or install it in an equipment rack.

Desktop Mounting

To mount the switch on a desktop or shelf:

1. Attach the four rubber feet (supplied) to the bottom of each corner on the switch.
2. Place the switch on a flat, stable, horizontal desktop or shelf. Make sure you allow enough ventilation space between the switch and surrounding objects.

The switch is ready for power and network connections.

Rack Mounting

The switch can be mounted in a standard 19-inch equipment rack. This rack can be placed in a wiring closet with other equipment (mounting kit supplied).

To install the switch in an equipment rack:

1. Attach mounting brackets on each side of the chassis.
2. Mount the switch in the equipment rack by screwing the mounting brackets to the equipment rack.

The rack mounting is complete. The switch is ready for network connections.

Powering on the Switch

The switch may be turned on with or without LAN segment cables connected.

To power on the switch:

1. Connect one end of the power cord (supplied) into the AC power connector on the back panel of the switch.
2. Connect the power cord into the plug on the rear panel of the switch, and plug the other end into a local power source outlet. The unit will power on.

Optional FX100 Modules

This section introduces the optional 100FX modules (sold separately) that can be installed on the front panel of the switch. The following module models are available:

- FX100-MMC
- FX100-SMC15
- FX100-SMC30
- FX100-SMC60

The FX100 modules are designed to extend the allowable distance between the switch and other network devices. The maximum distance that can be achieved with fiber cabling is 2 kilometers (multi-mode fiber) and up to 15, 30 or 60 kilometers (single-mode fiber).

Front Panels

The front panels of the FX100 modules consist of LED indicators, two thumbscrews, a DIP-switch for half and full-duplex mode (full-duplex is the default) and one fiber port.

Note: Another DIP-switch is found on the module's board to enable or disable Flow Control (enabled is the default).

Module LED Indicators

The LED indicators provide real-time information of systematic operation status. The following table provides descriptions of LED indicators on the modules, and their meanings.

LED	Status	Description
TX	Blinks Off	The port is transmitting data. No data is being transmitted.
RX	Blinks Off	The port is receiving data. No data is being received.
Link	Green Off	A valid link has been established on the port. No link has been established on the port.
Full-Duplex	Yellow Blinking Yellow Off	The port is operating in full-duplex mode. The port is operating in half-duplex. No link has been established on the port, or the port is in half-duplex mode.

Installing an FX100 Module

Follow the steps below to install the FX100 modules:

Important! Before beginning the installation of a module, disconnect the power from the switch. The FX100 modules are **NOT** hot-swappable!

1. Unscrew the blank bracket from the front of the fiber port, using the thumbscrews, and set aside.
2. Align the bottom of the module with the guides on the inside of the port.
3. Slide the module into the port until it stops. Press firmly until you feel the module snap into place. Never force, twist or bend the module.
4. Gently push the thumbscrews in and turn clockwise to tighten. Be careful not to over-tighten the thumbscrews.
5. Power on the switch (it will automatically detect the FX100 module). Plug the fiber cable connector into the FX100 module, and connect the other end into a network device. Check the LEDs to verify that there is a link established on the port.

Chapter 3. Network Application

This section provides a few samples of network topology in which the switch can be used. In general, the switch is designed to be used as a segment switch. That is, with its large address table (8000 MAC address) and high performance, it is ideal for interconnecting networking segments.

You can use the switch to connect PCs, workstations, and servers to each other by connecting these devices directly to the switch. The switch automatically learns nodes addresses, which are subsequently used to filter and forward all traffic based on the destination address.

The switch can connect with another switch or hub to interconnect each of your small, switched workgroups to form a larger switched network. Meanwhile, you can also use fiber ports to connect switches. The distance between two switches via fiber cable can be up to 2 kilometers (multi-mode fiber) or 15~60 kilometers (single-mode fiber).

Small Workgroup

The switch can be used as a standalone switch to which personal computers, servers or printer servers are directly connect to form a small workgroup.

Segment Bridge

For enterprise networks where large data broadcasts are constantly processed, this switch is an ideal solution for department users to connect to the corporate backbone.

For example, two Ethernet switches, both with PCs and/or a print server, and a local server can all connected to the FM2017. All of the devices in this configuration can communicate with each other through the FM2017. Connecting a server to the switch allows other users to access that server's data.

VLAN Application

A Virtual Local Area Network (VLAN) logically segments the physical LAN so that packets are switched only between ports within the same VLAN group. This creates secure segments, as well as enables efficient traffic separation, provides better bandwidth utilization and alleviates cabling issues.

You can group the switch ports into broadcast domains by assigning them to the same VLAN group to increase network capacity and performance. Moreover, VLAN groups can be modified at any time to add, move or change users without any re-cabling (for more information, see Chapter 5. Web-Based Management).

Chapter 4. Network Configuration

This chapter explains how to configure console management via a direct connection to the console port of the switch.

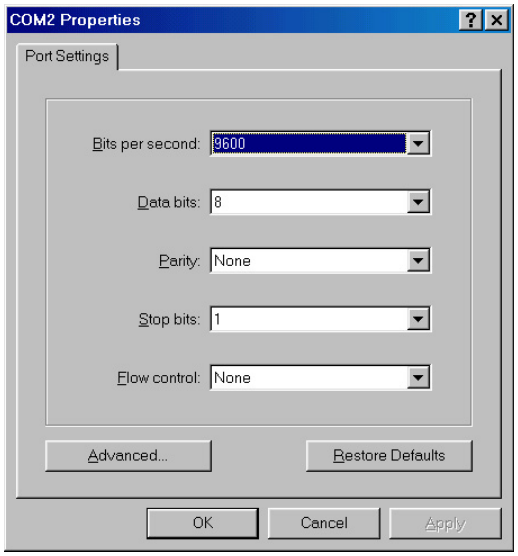
Console management involves the administration of the switch via a direct connection to the RS-232 console port. This port is a female DB-9 connector. From the main menu of the console program, the user has access to manage the functions of the switch.

Connecting a Terminal or PC to the Console Port

The console configuration (out-of-band management) allows you to enable a user at a remote console terminal to communicate with the switch as if the console terminal were directly connected to it.

Use the supplied RS-232 cable to connect a terminal or PC to the console port. The terminal or PC to be connected must support the terminal emulation program.

After the connection between switch and PC is finished, turn on the PC and run a **terminal emulation program** or **Hyper Terminal** to match the following default characteristics of the console port:



Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None

Baud Rate: 9600 bps
Data Bits: 8
Parity: None
Stop Bit: 1
Control flow: None

Note: When setting up the Hyper Terminal, set the Emulation Mode to “**VT100**”.

After you have finished setting the parameters, press **OK** and then press **Enter**. The Main Menu of the console management program appears in the emulation program’s window.

```
---<<Current configuration>>---------------------------[1.0(beta 2)]----
-
[MAC=00:00:94:D1:1C:22]
[IP=192.168.0.1] [mask=255.255.255.0] [broadcast=255.255.255.255]
[gateway=0.0.0.0]
-----------------------------------------------------------------------
-
1. boot-method    = [flash]
2. ip-address     = [192.168.0.1]
3. subnet mask    = [255.255.255.0]
4. broadcast      = [255.255.255.255]
5. gateway        = [0.0.0.0]
6. traps=[0.0.0.0] [0.0.0.0] [0.0.0.0] [0.0.0.0]
7. get-community  = [public]
8. set-community  = [private]
9. trap-community = [public]
A. sys-contact    = [The contact person for this agent]
B. sys-name       = [The administrative name of the agent]
C. sys-location   = [The Physical location of the agent]
D. Telnet server  = [on]
E. Http server    = [on]
F. Telnet/Http username = [root]
G. Telnet/Http password = [enabled]
H. reboot  I. logout  J. ping  K. help  L. loaddefault
M. securedip = [0.0.0.0],[0.0.0.0],[0.0.0.0]
>>>>
```

Assigning IP Address

After you have attached a terminal or PC with emulation software, you are ready to make a connection using a web browser. You first have to assign an IP address to the switch.

Once you have logged into the switch, you need to assign an IP address to the switch's Ethernet Interfaces so that you can connect to the switch using a web browser.

If you want to change from the default IP address (192.168.0.1), for example, there are three kinds of commands to choose from. After the symbol **>>>>**, type in:

1. "ip-address xxx.xxx.xxx.xxx" (where the x's represent an IP address from your network).
2. "2 xxx.xxx.xxx.xxx ".
3. "ip xxx.xxx.xxx.xxx".

```
1. boot-method    = [flash]
2. ip-address     = [192.168.0.1]
3. subnet mask    = [255.255.255.0]
4. broadcast      = [255.255.255.255]
5. gateway        = [0.0.0.0]
6. traps=[0.0.0.0] [0.0.0.0] [0.0.0.0] [0.0.0.0]
7. get-community  = [public]
8. set-community  = [private]
9. trap-community = [public]
A. sys-contact    = [The contact person for this agent]
B. sys-name       = [The administrative name of the agent]
C. sys-location   = [The Physical location of the agent]
D. Telnet server  = [on]
```

```
E. Http server    = [on]
F. Telnet/Http username = [root]
G. Telnet/Http password = [enabled]
H. reboot  I. logout  J. ping  K. help  L. loaddefault
M. securedip = [0.0.0.0],[0.0.0.0],[0.0.0.0]
>>>>
```

Press **H** to reboot the switch after making your change. Press **Enter** twice, and the new IP address will now be displayed.

By the similar methods, you can configure the **Subnet Mask** (Default subnet mask is **255.255.255.0**), **Broadcast** (Default Broadcast is 255.255.255.255), and **Default Gateway** (Default Gateway is **0.0.0.0**). The gateway address is the router that can forward packets to the other IP networks.

Note: After you finish configuring the above settings, you must execute **H (reboot)** command to take effect. Afterwards, you can use the **J (Ping)** command to check whether the network setting has finished or not.

Secured IP

Secured IP can guard against unauthorized users gaining access to your network configurations. You can allow up to three IP addresses to have access to the switch via telnet or a web browser.

The default Secured IP is **0.0.0.0** for all three entries, which means that no network security on IP was set from original factory setting.

Type in "**M 1 xxx.xxx.xxx.xxx**" after the symbol >>>> and press **Enter** twice in order to set the first secured IP (where the x's stand for the desired IP address from your network). Then only the end station with IP address that you set has access to the network management and configuration.

```
6. traps=[0.0.0.0] [0.0.0.0] [0.0.0.0] [0.0.0.0]
7. get-community  = [public]
8. set-community  = [private]
9. trap-community = [public]
A. sys-contact    = [The contact person for this agent]
B. sys-name       = [The administrative name of the agent]
C. sys-location   = [The Physical location of the agent]
D. Telnet server  = [on]
E. Http server    = [on]
F. Telnet/Http username = [root]
G. Telnet/Http password = [enabled]
H. reboot  I. logout  J. ping  K. help  L. loaddefault
M. securedip = [0.0.0.0],[0.0.0.0],[0.0.0.0]
>>>> M 1 xxx.xxx.xxx.xxx
```

Repeat the process for the other two addresses, if desired.

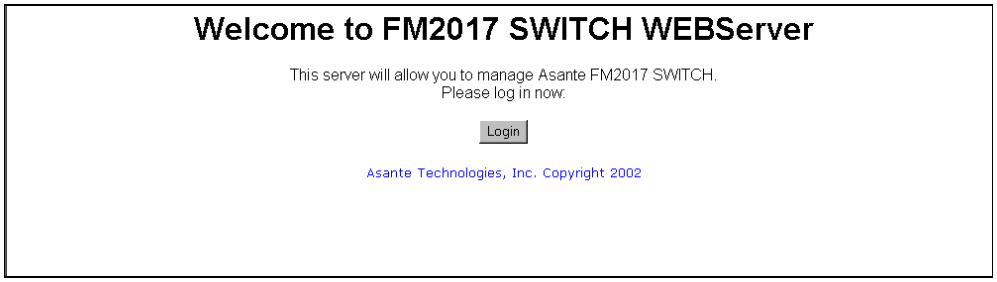
Chapter 5. Web-Based Management

This section introduces the configuration and functions of the web-based management of switch.

The FM2017 provides an embedded HTML website residing in the CPU module. It offers management features and allows users to manage the switch from anywhere on the network through a standard web browser.

System Login

1. Launch your web browser.
2. Enter the IP address of the switch in the URL window (http://192.168.0.1). Then press **Enter**.
3. Then the following *Welcome* screen appears.

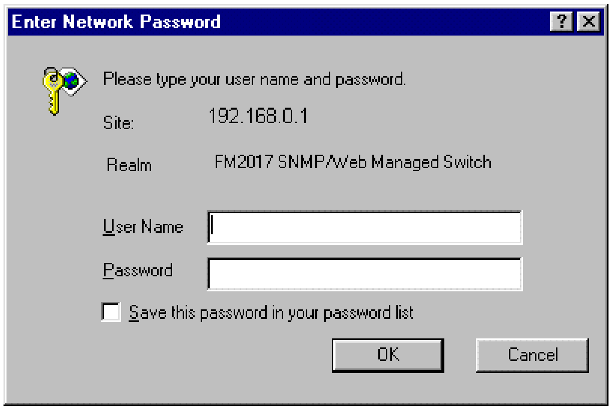


Welcome to FM2017 SWITCH WEBServer

This server will allow you to manage Asante FM2017 SWITCH.
Please log in now.

Asante Technologies, Inc. Copyright 2002

4. Click **Login** button, then the Password Dialogue Box appears.



Enter Network Password

Please type your user name and password.

Site: 192.168.0.1

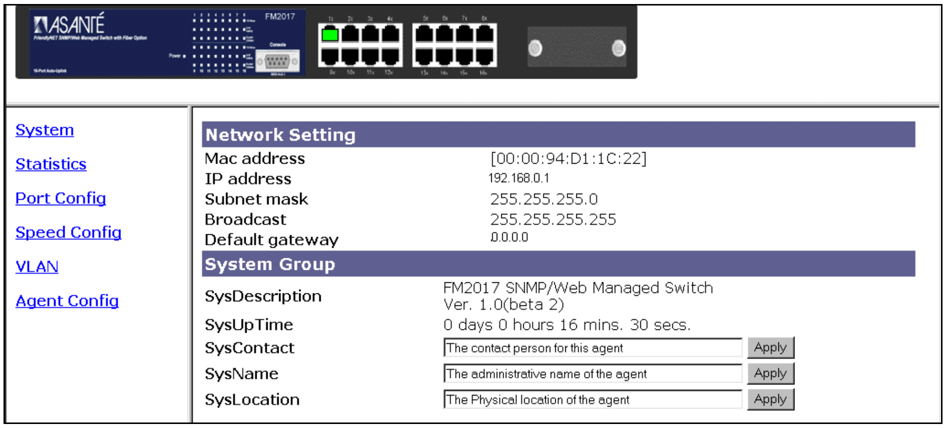
Realm FM2017 SNMP/Web Managed Switch

User Name

Password

□ Save this password in your password list

5. Type in your User Name and Password (the default is "**root**" for both).
6. Press **Enter** or click **OK**. The *System* screen appears.



System

Statistics

Port Config

Speed Config

VLAN

Agent Config

Network Setting	
Mac address	[00:00:94:D1:1C:22]
IP address	192.168.0.1
Subnet mask	255.255.255.0
Broadcast	255.255.255.255
Default gateway	0.0.0.0

System Group		
SysDescription	FM2017 SNMP/Web Managed Switch Ver. 1.0(beta 2)	
SysUpTime	0 days 0 hours 16 mins. 30 secs.	
SysContact	The contact person for this agent	Apply
SysName	The administrative name of the agent	Apply
SysLocation	The Physical location of the agent	Apply

Inside the *System* page, the following information about the switch is listed:

Network Setting

- **IP address**: 192.168.0.1
- **Subnet Mask**: 255.255.255.0
- **Broadcast**: 255.255.255.255
- **Default gateway**: 0.0.0.0

The configuration above is only a reference setting. If you want to reset or change the numbers, you can click **Agent Config** to change or reset them.

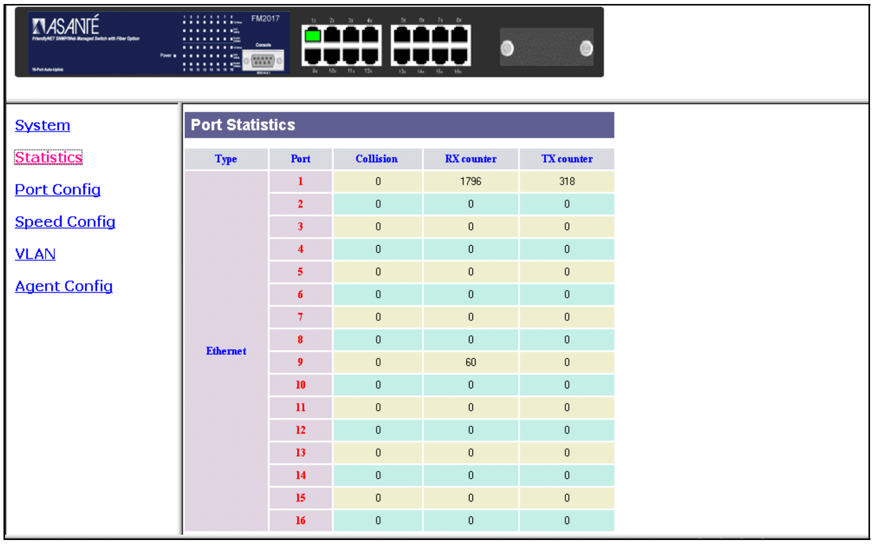
System Group

- **SysDescription**: Lists the switch name and firmware version number
- **SysUpTime**: Lists the time elapsed since powering on the switch
- **SysContact**: Enter the name of the person to contact if there are problems with the switch
- **SysName**: Enter a name for the switch
- **SysLocation**: Enter the switch's location; for example, "MIS Department"

Remember to click **Apply** after entering any new information**.**

Statistics Screen

The *Statistics* page displays the detailed information on network traffic for each Ethernet port and the fiber port.



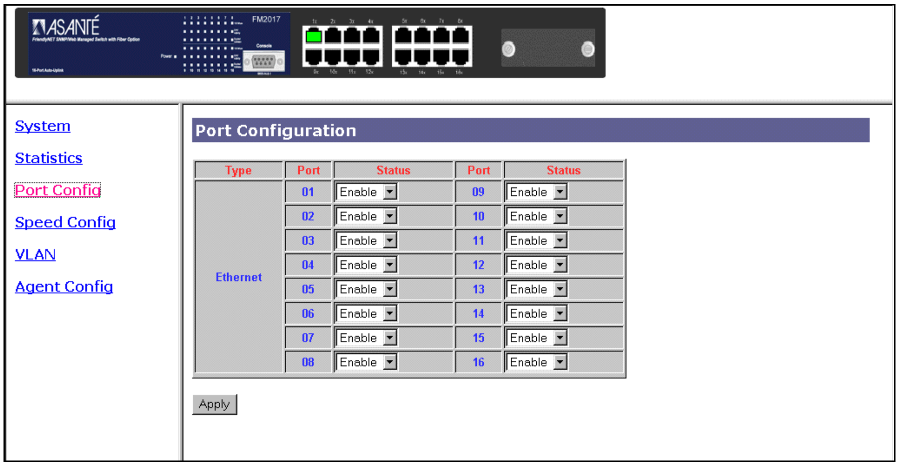
Port Statistics

Type	Port	Collision	RX counter	TX counter
Ethernet	1	0	1796	318
	2	0	0	0
	3	0	0	0
	4	0	0	0
	5	0	0	0
	6	0	0	0
	7	0	0	0
	8	0	0	0
	9	0	60	0
	10	0	0	0
	11	0	0	0
	12	0	0	0
	13	0	0	0
	14	0	0	0
	15	0	0	0
	16	0	0	0

The data is automatically updated at regular intervals.

Port Config Screen

You can use the *Port Config* page to disable/enable each port. By default, all the ports are *Enabled*.



Port Configuration

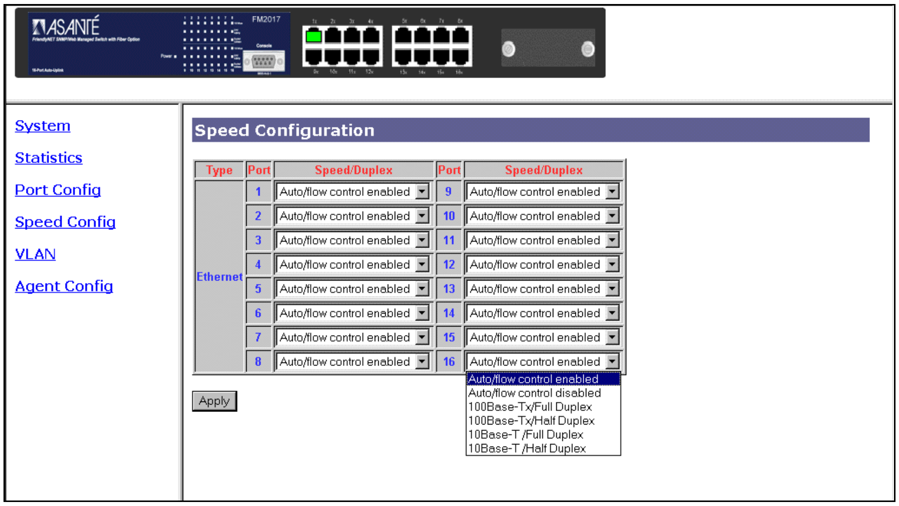
Type	Port	Status	Port	Status
Ethernet	01	Enable	09	Enable
	02	Enable	10	Enable
	03	Enable	11	Enable
	04	Enable	12	Enable
	05	Enable	13	Enable
	06	Enable	14	Enable
	07	Enable	15	Enable
	08	Enable	16	Enable

To disable or enable a port:

1. Select the drop-down menu in the *Status* column.
2. Choose the status you want for each Ethernet and Fiber port.
3. Remember to click **Apply** button after finishing your new settings.

Speed Config Screen

In the *Speed Config* page, you can manually configure the speed and duplex of each port in order to match any attached devices.



Speed Configuration

Type	Port	Speed/Duplex	Port	Speed/Duplex
Ethernet	1	Auto/flow control enabled	9	Auto/flow control enabled
	2	Auto/flow control enabled	10	Auto/flow control enabled
	3	Auto/flow control enabled	11	Auto/flow control enabled
	4	Auto/flow control enabled	12	Auto/flow control enabled
	5	Auto/flow control enabled	13	Auto/flow control enabled
	6	Auto/flow control enabled	14	Auto/flow control enabled
	7	Auto/flow control enabled	15	Auto/flow control enabled
	8	Auto/flow control enabled	16	Auto/flow control enabled

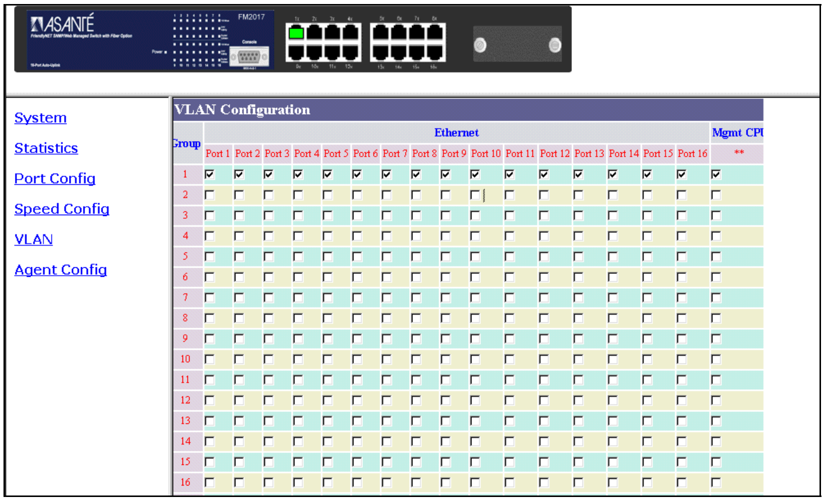
To set these parameters for a port:

1. Select the drop-down menu in *Speed/Duplex* column.
2. Select one of the following choices: Auto/flow control enabled, Auto/flow control disabled, 100Base-Tx/Full Duplex, 100Base-Tx/Half Duplex, 10Base-T/Full Duplex or 10Base-T/Half Duplex.
3. Click **Apply**.

VLAN Screen

A VLAN (Virtual LAN) is a group of switch ports designated by the switch as belonging to the same broadcast domain. This feature allows workgroups to be defined on the basis of their logical location instead of their physical location, and does not require recalling.

VLANs also enable you to configure port-based VLANs to help isolate broadcast traffic and increase security.



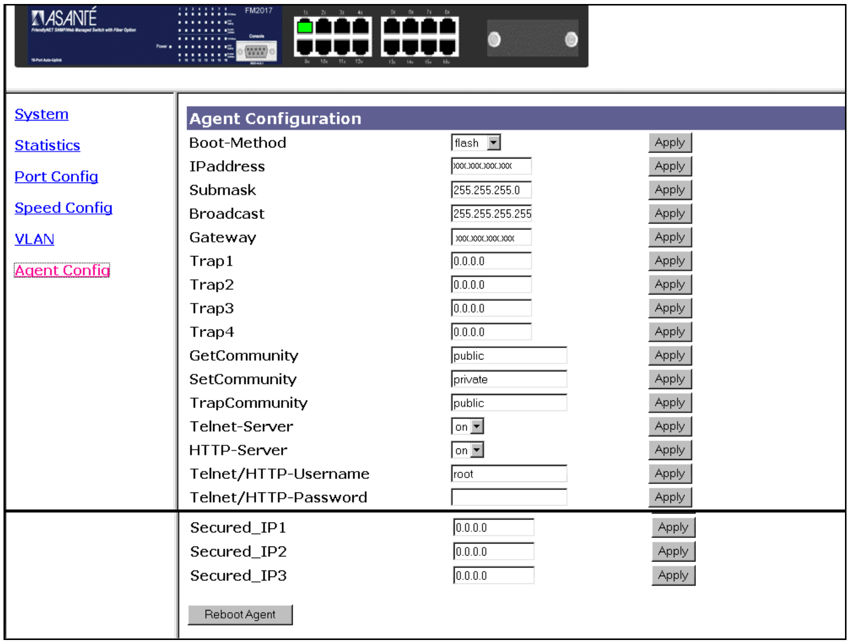
VLAN Configuration

Group	Ethernet																Mgmt CPU
	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	Port 9	Port 10	Port 11	Port 12	Port 13	Port 14	Port 15	Port 16	**
1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
2	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
3	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
4	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
5	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
6	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
7	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
8	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
9	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
10	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
11	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
12	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
13	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
14	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
15	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
16	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□

In this *VLAN* page, you can create VLAN groups by clicking the check boxes for each desired Port number across from each Group number (by default, all ports are in VLAN Group 1). Click **Apply** at the bottom of the VLAN page for your configuration to take effect.

Agent Config Screen

In the *Agent Config* page, the switch's current configurations are displayed. You can refer to the following *Agent Config* page for your own setting.



Agent Configuration

Boot-Method	flash ▾	Apply
IPaddress	xxx.xxx.xxx.xxx	Apply
Submask	255.255.255.0	Apply
Broadcast	255.255.255.255	Apply
Gateway	xxx.xxx.xxx.xxx	Apply
Trap1	0.0.0.0	Apply
Trap2	0.0.0.0	Apply
Trap3	0.0.0.0	Apply
Trap4	0.0.0.0	Apply
GetCommunity	public	Apply
SetCommunity	private	Apply
TrapCommunity	public	Apply
Telnet-Server	on ▾	Apply
HTTP-Server	on ▾	Apply
Telnet/HTTP-Username	root	Apply
Telnet/HTTP-Password		Apply
Secured_IP1	0.0.0.0	Apply
Secured_IP2	0.0.0.0	Apply
Secured_IP3	0.0.0.0	Apply

Reboot Agent

Boot Method

There are three modes of Boot Method:

- **FLASH**: Boot your system by flash settings. Flash memory resides in a chip and holds its content without power. Software images can be stored, booted and rewritten as necessary
- **BOOTP**: Boot your system from BOOTP server (Bootstrap Protocol). A TCP/IP protocol used by a diskless workstation or network computer to obtain its IP address and other network information such as server address and default gateway
- **DHCP**: Boot your system from DHCP server (Dynamic Host Configuration Protocol). Software automatically assigns IP addresses to client stations logging onto a TCP/IP network

SNMP Management

You can manage the switch using a third-party SNMP (Simple Network Management Protocol) agent. Access rights to the SNMP agent are controlled by community strings.

The switch provides up to 4 IP addresses for the access of trap managers. You can submit community strings on ***GetCommunity***, ***SetCommunity*** and ***TrapCommunity*** to authorize management access. The default community strings for the above three items are all **public**. For security, you should change them to prevent unauthorized access.

GetCommunity: (Read-only access) means that a member of community can view the information but cannot make changes to the configuration.
SetCommunity: (Read/Write access) allows the member of the community to view and make changes to the configuration.
TrapCommunity: (Read/Write access) allows a manager to receive trap events (alarms).

Default Agent Configuration

The following are the default values of the *Agent Config* of the switch. You can change the information listed by entering new information (for example, you can change the switch's IP address by directly typing in a new IP address).

Click **Apply** after entering the information.

- **Boot-Method**: flash
- **IP address**: 192.168.0.1
- **Submask**: 255.255.255.0
- **Broadcast**: 255.255.255.255
- **Gateway**: 0.0.0.0
- **Trap1**: 0.0.0.0
- **Trap2**: 0.0.0.0
- **Trap3**: 0.0.0.0
- **Trap4**: 0.0.0.0
- **GetCommunity**: public
- **SetCommunity**: public
- **TrapCommunity**: public
- **Telnet-Server**: on
- **HTTP-Server**: on
- **Telnet /Http-Username**: root
- **Telnet /Http-Password**: root
- **Secured_IP1**: 0.0.0.0
- **Secured_IP2**: 0.0.0.0
- **Secured_IP3**: 0.0.0.0

After you have finished entering the new settings for Boot-method, IP Address, Submask, Broadcast and Gateway, remember to click **Reboot Agent** to have your changes take effect.

Appendix A. Troubleshooting

This section is intended to help you solve the most common problems on the switch. If you still are having problems after reading through the information here, contact Asanté's Technical Support for assistance.

Your switch can easily be monitored through the LED indicators to assist in identifying problems. Below are listed common problems that you may encounter and where you can find possible solutions.

Incorrect Connections

When connecting to another switch or hub, you must use a **crossover cable** from an RJ-45 MDIX connector on your switch to a MDIX connector on the other switch/hub. If you have a straight-through cable, the connection will not work.

LAN adapters in end nodes are normally wired as MDI ports, as are some ports on switches or hubs. For connections from the switch to these MDI ports, use a **straight-through cable**.

Faulty or Loose Cables

Look for loose or obviously faulty connections. If the cabling appears to be all right, make sure the connections are snug. Finally, try the connection with a known working cable.

Non-Standard Cables

Non-standard and incorrectly wired cables can cause numerous network collisions and other network problems, seriously impairing network performance. Asanté recommends UTP Category 5 or better UTP cable for every network installation.

Improper Network Topologies

Make sure that a valid network topology is employed. Common topology faults include excessive cable length, too many repeaters (hubs) between end nodes, and data path loops. Between any two nodes, there should only be one active cabling path at any time. Data path loops will cause broadcast storms that will severely impact network performance.

Cabling

RJ-45 ports: Use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: Category 3, 4 or 5 cable for 10Mbps connections or Category 5 cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

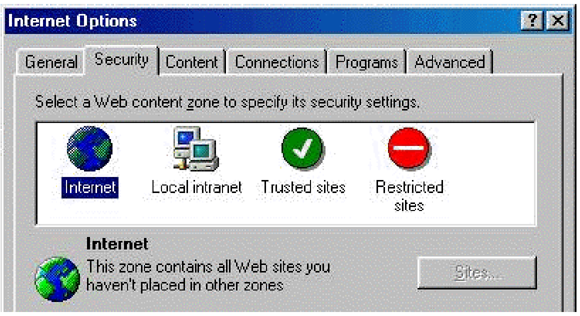
100Base-FX fiber port: Fiber multi-mode connector type must use 50/125 or 62.5/125 um multi-mode fiber cable. You can connect two devices over a 2-kilometer distance. However, fiber single-mode connector type must use 9/125 um single-mode fiber cable. You can connect two devices over a15~60-kilometer distance in full-duplex operation.

Appendix B. Internet Explorer Setting

If you are using Internet Explorer, you have to modify the browser setting to enable Java applets to use network ports. We used Internet Explorer 5.0 for the following demonstration.

First, select "**Internet Optional**.." under "**Tools**" of the function bar, then follow the step-by-step instructions below.

1. Select the *Security* tab.
2. Click **Trusted sites**.

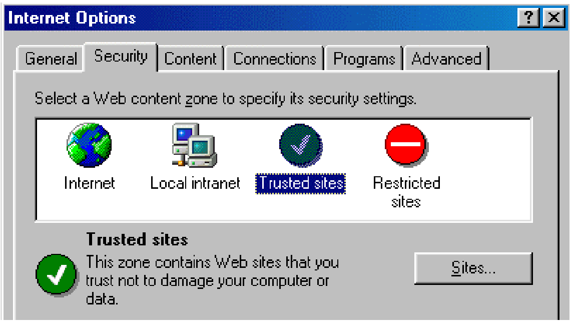


Select a Web content zone to specify its security settings.

Internet

This zone contains all Web sites you haven't placed in other zones

3. Click **Sites**.

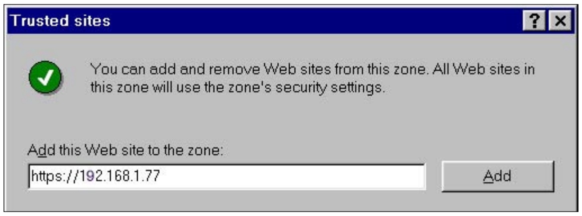


Select a Web content zone to specify its security settings.

Trusted sites

This zone contains Web sites that you trust not to damage your computer or data.

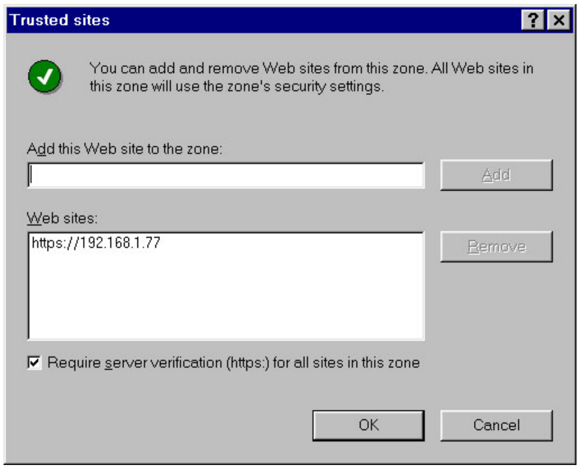
4. Add the IP address (http://192.168.0.1) of the switch to the zone, and then click **Add**.



You can add and remove Web sites from this zone. All Web sites in this zone will use the zone's security settings.

Add this Web site to the zone: https://192.168.1.77

5. Disable left-bottom box *Require server verification for all sites in this zone*, then click **OK**.



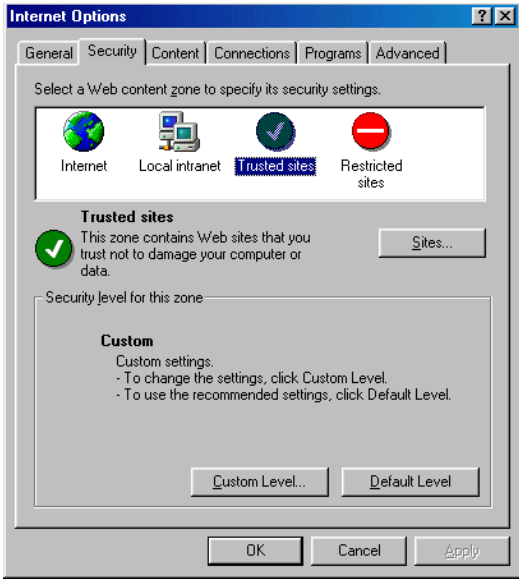
You can add and remove Web sites from this zone. All Web sites in this zone will use the zone's security settings.

Add this Web site to the zone:

Web sites: https://192.168.1.77

☑ Require server verification (https:) for all sites in this zone

6. Go back to Internet Options, then click **Custom Level**.



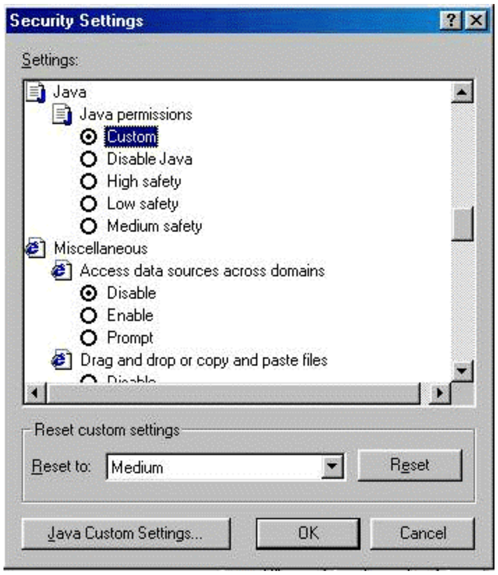
Select a Web content zone to specify its security settings.

Trusted sites
This zone contains Web sites that you trust not to damage your computer or data.

Security level for this zone

Custom
Custom settings.
- To change the settings, click Custom Level.
- To use the recommended settings, click Default Level.

7. Scroll down to find **Java**.
8. Select **Custom** under *Java* and click **Java Custom Settings**.

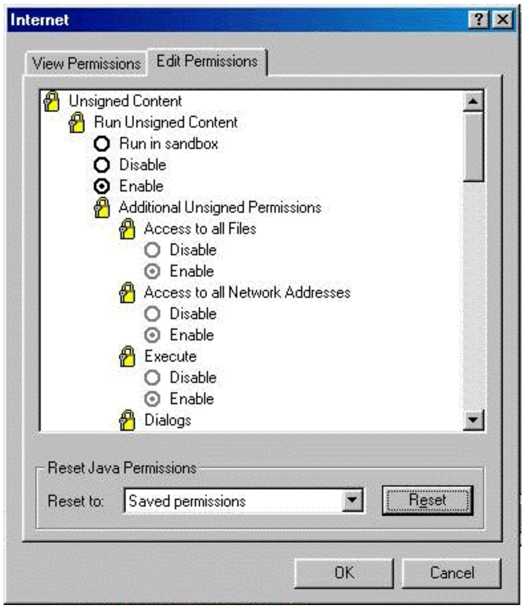


Java
- Java permissions
  - ● Custom
  - ○ Disable Java
  - ○ High safety
  - ○ Low safety
  - ○ Medium safety

Miscellaneous
- Access data sources across domains
  - ● Disable
  - ○ Enable
  - ○ Prompt
- Drag and drop or copy and paste files
  - ○ Disable

Reset to: Medium

9. Select the *Edit Permissions* tab.
10. Select **Enable** under **Unsigned Content**, and then press **OK**.



Unsigned Content
- Run Unsigned Content
  - ○ Run in sandbox
  - ○ Disable
  - ● Enable
- Additional Unsigned Permissions
  - Access to all Files
    - ○ Disable
    - ● Enable
  - Access to all Network Addresses
    - ○ Disable
    - ● Enable
  - Execute
    - ○ Disable
    - ● Enable
  - Dialogs

Reset to: Saved permissions

Appendix C. Specifications and Warranty Statement

FriendlyNET FM2017 Specifications

Standards	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet ANSI/IEEE 802.3 N-Way auto-negotiation
Protocol	CSMA/CD
Maximum Forwarding Rate	14,880 pps per Ethernet port 148,800 pps per Fast Ethernet port
LED Indicators	Per Port: 10/100 UTP: 100M, LK/ACT, Full Duplex (3 LEDs) 100M Fiber: TX, RX, Link, Full Duplex (4 LEDs) Per Unit: Power
Copper Network Cables	10Base-T: 2-pair UTP Category 3, 4 or 5 (100m max.) EIA/TIA-568 100Ohm STP (100m) 100Base-TX: 2-pair UTP Category 5 or better (100m max.) EIA/TIA-568 100-ohm STP (100m)
Fiber Link Maximum Distance	ST/SC/MT-RJ/VF-45 Multi-mode: Full-Duplex=2K, half-duplex=412 meters SC Single-Mode: Full-Duplex= 60K, half-duplex=412 meters
Interface	One CPU expansion slot to upgrade SNMP function
Dimensions	Switch: 440mm x 162mm x 44mm (L x W x H) 100FX Module: 102mm x 71mm x 24mm (L x W x H)
Operational Temperature Storage Temperature	0° to 45° C (32° to 113° F) -40° to 70°C (-40° to 158° F)
Operational Humidity	10% to 90% (non-condensing)
External Power Supply	100-240V AC, 50-60Hz Internal universal power supply
Power Consumption	25 Watts (max)
EMI	FCC Class A, CE Mark
Safety	UL, cUL
Limited Warranty	2 year Limited Warranty (see complete statement below)

FriendlyNET Limited 2-Year Warranty

Subject to the limitations and exclusions below, Asanté warrants to the original end user purchaser that the covered products will be free from defects in title, materials and manufacturing workmanship for a period of two years from the date of purchase. This warranty excludes fans, power supplies, non-integrated software and accessories. Asanté warrants that the fans and power supplies will be free from defects in title, materials and manufacturing workmanship for two years from date of purchase. Asanté warrants that non-integrated software included with its products will be free from defects in title, materials, and workmanship for a period of 90 days from date of purchase, and the Company will support such software for the purpose for which it was intended for a period of 90 days from the date of purchase. This warranty expressly excludes problems arising due to compatibility with other vendors' products, or future compatibility due to third party software or driver updates.

To take advantage of this warranty, you must contact Asanté for a return materials authorization (RMA) number. The RMA number must be clearly written on the outside of the returned package. Product must be sent to Asanté postage paid. In the event of a defect, Asanté will repair or replace defective product or components with new, refurbished or equivalent product or components as deemed appropriate by Asanté. The foregoing is your sole remedy, and Asanté's only obligation, with respect to any defect or non-conformity. Asanté makes no warranty with respect to accessories (including but not limited to cables, brackets and fasteners) included with the covered product, nor to any discontinued product, i.e., product purchased more than thirty days after Asanté has removed such product from its price list or discontinued shipments of such product.

This warranty is exclusive and is limited to the original end user purchaser only. This warranty shall not apply to secondhand products or to products that have been subjected to abuse, misuse, abnormal electrical or environmental conditions, or any condition other than what can be considered normal use.

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FriendlyNET FM2017
SNMP/Web Managed Switch with Fiber Option
User's Manual

Asanté Technologies, Inc.
821 Fox Lane
San Jose, CA 95131
USA

SALES
800-662-9686 Home/Office Solutions
800-303-9121 Enterprise Solutions
408-435-8388

TECHNICAL SUPPORT
801-566-8991: Worldwide
801-303-3787: FAX
www.asante.com
support@asante.com

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